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PHARMACY IN DENMARK.

By Hans M. Wilder.

There having appeared in the *American Journal of Pharmacy* notices on the state of pharmacy in almost every country in Europe (Austria, Belgium, France, Germany, Great Britain, Holland, Italy, Norway, Russia, Spain, Sweden, Switzerland and Turkey), I thought that an account of pharmacy in Denmark would not be entirely uncalled for.

The number of pharmacies in Denmark (as is the case in most European countries) is limited by virtue of the control which the Royal Board of Health exercises over them. A privilege (license) is granted only to persons who are recommended by the Board as competent pharmacists, and then only where a real want of a pharmacy exists. There are two classes of privileges: *real* and (chiefly since 1842) *personal.* A real privilege is transferable, and can be bought by any one who has fulfilled all the requirements of the law. (All privileges granted before 1842 are practically considered real.) A personal privilege, on the contrary, is granted only for lifetime, and is, consequently, non-transferable. When the owner of such a privilege dies, the place is open for a new competition, unless the widow, as is generally the case, is granted permission for one or more years to conduct the business under the supervision of a *provisor.*

They are now trying to convert the "real" privileges into "personal" ones, but experience the same trouble as pharmacists do in Germany and elsewhere; and I think that Sweden is, as yet, the only country which has approached a satisfactory solution the nearest. Respecting "free trade," there exists the same hard struggle, as in other countries, between pharmacists with stores and those with-

out stores. The pharmacies emerged by degrees from the kitchen of the physician, until they became independent. The first privilege on record dates 1536 (Svane Apothek, Copenhagen); the six next, respectively, 1543, 1549, 1573, 1581, 1585, 1591. The whole number of pharmacies in 1870 was 115, to a population of 1,783,585, which makes an average of one to every 15,509; thus it will be seen that, as a rule, pharmacies in Denmark must yield quite a comfortable competency.

The only collection of ordinances (pharmaceutical laws) begins 1660. Already in 1668 yearly inspection of pharmacies was insisted on, but it was first in 1672 that a full ordinance appeared, detailing, in thirty paragraphs, the duties and requirements of the apothecaries, and, incidentally, those of the physicians. I may be permitted to extract a few of said paragraphs, in order to show that two hundred years ago the requirements were quite up to the modern standard.

None but regularly graduated physicians were permitted to prescribe. The pharmacies must be inspected at least once a year; twice or oftener, if deemed necessary. In said inspections the quality of drugs and preparations must be examined into, and whether the apothecaries in their prices adhered to the annually issued price-lists; likewise, accuracy of weights and measures. Poisons to be kept in a separate compartment (or room) under lock and key. Arsenic and sublimate only to be sold by the apothecary.

When poisons or active medicines (heroica) were prescribed, then the physician had to write out the name and quantity in full, neither abbreviations nor *chymical signs* being allowed. None but graduates must keep pharmacies, and every apothecary must keep at least one examined assistant. Further, they were enjoined to let their apprentices attend the professor of botany in his excursions, and, as far as possible, cultivate medicinal plants in their gardens. No prescribing over the counter allowed. All preparations had to be made by themselves, and electuaries (mithridate, etc.) to be prepared only in presence of several physicians, who had to duly label them and mark the date and quantity. In their preparations they had to conform to the Dispensatorium Hafniense, which from time to time was revised by the College of Physicians. In case of patients dying, the claim of the apothecary had precedence before any other claims. No *quid pro quo* (substitution) permitted; in case of doubt, they had to con-

sult with the physician. No physician allowed to keep or have part in a pharmacy.

In 1753 an ordinance forbid any apothecary to keep more than one store in the same town. In 1796 appeared the first detailed poison law, which, among other things, contains the proviso that arsenic can only be sold on certificate from the respective mayor or parson, and then only one ounce at the time. An ordinance, from 1843, permits the sale of lead water without prescription.

In 1810 apothecaries were required to notify the *district physician* whenever they intended to leave town for more than twenty-four hours, unless their assistant happened to be a graduate. In case the annual price-list was not strictly adhered to, the apothecary in fault was fined $50 for the first offence, $100 for the second, and, if caught a third time, he *lost his privilege.* An assistant would be fined one-half, and the third time declared *unworthy to serve* in any pharmacy in Denmark. (April 21, 1812.)

The first Pharmacopœia Danica appeared in 1772; the subsequent revisions respectively in 1805, 1840, 1850, (1857), 1868. There exist, besides, collections of formulas for the use of the chief hospital, for the military and for the poor.

Pharmaceutical life is as follows:

The apprentice must be at least fifteen years of age, and have left high-school from one of the two upper forms. If the latter be not the case, he has to pass a preliminary examination to show that he possesses a fair school education, and is proficient in Latin.

He has to serve four years before he is permitted to take his first degree (Physikat examen).

At this examination he is required to translate the Pharmacopœia, recognize drugs, read abbreviated prescriptions, put up prescriptions, make one of the easier preparations, and show a fair knowledge of practical chemistry, poison laws and doses, and of indigenous medical botany. If successful, he is declared *assistant*, and as such has a right to put up prescriptions on his own responsibility, but is not allowed to take charge of a store for a longer period than twenty-four hours. After further serving for a couple of years, or after attending two courses of lectures at the University, he may take his last degree, which makes him a *graduate* (candidat), and gives him equal standing with the apothecary (minus the ownership of a store).

This last examination requires him to make an official chemical

preparation, one or more tests, and a qualitative analysis (of any mechanical mixture), on each of which three he has to write a report (thesis). Said preparations (and analysis) being made, and reports written on three consecutive days within twelve hours each day, during which time he is not allowed to talk to anybody, or leave the room before his task is finished, nor are text-books allowed.

Then comes the theoretical part, which is conducted orally, and consists of questions in practical pharmacy, theoretical and practical chemistry, natural philosophy, botany, pharmacology. There are three degrees of qualification, according to the number of points made: *Laudabilis*, *haud-illaudabilis* and *non-contemnendus* (praiseworthy, not unpraiseworthy, not to be despised); graduates with the last degree generally try to make the examination over again. For exceptional proficiency in all branches there exists a fourth degree: *Laudabilis præ ceteris* (praiseworthy above all others). There is one peculiarity, which obtains in putting up prescriptions, viz., that every prescriptionist must put his name on the label every time a prescription is put up; in case of mistakes, it is at once traced to the guilty party.

In general, the Danish apothecaries are not permitted to sell other things but drugs and medicines (including cologne, pomatum, hair oil, chocolate); since, in small places, the legitimate part of business is not likely to be sufficiently remunerative, permission is granted to deal in groceries and general sundries besides. As a curiosity, it may be mentioned that such a small apothecary was backed in 1804 by an ordinance forbidding the grocers and other dealers in the same place to deal, among other things, in spirits of turpentine, purified saltpetre, licorice root, licorice, muriate of ammonia and guaiacum wood.

The roll of graduates was kept regularly only since 1770, and numbered, in the one hundred years ending 1870, 1140. Of those graduates who have distinguished themselves, must first and foremost be named H. C. Oersted (graduated 1797), the discoverer of electromagnetism; W. C. Zeise (from 1815) is well known for his researches on mercaptan, thialic ether, xanthic acid and ether, the action of chloride of platinum on alcohol, etc.; E. A. Scharling (from 1828), through his researches on some starches, fats, oleoresins and balsams, is not entirely unknown as a chemist; Dr. William Neergaard, for many years Vice-President of the New York College of Pharmacy,

graduated 1831; Baruch S. Levy or Lewy (from 1835) became known through his investigations of the atmosphere, wax, etc., and his connection with the mint in Paris, France.

There exists two pharmaceutical journals: one, started in 1844 (*Archiv for Pharmaci og technisk chemi*), appears quarterly, and corresponds to the *American Journal of Pharmacy;* the other one is, properly speaking, a weekly sheet (*Pharmaceutisk Tidende*). Of associations there are two, viz., "The Apothecaries' Association," whose aims and purpose correspond to those of the American Pharmaceutical Association, and the "Pharmaceutical Association," which is more like our local pharmaceutical societies, besides a Pharmaceutical Relief Association.

The Royal Board of Health (Sundheds Collegium) consists of two physicians and two apothecaries.

In speaking of Danish Pharmacy, I must not forget to mention S. M. Trier, who in many respects stands in the same relation to Danish pharmacy as the late Prof. Procter stood to American Pharmacy. Mr. Trier started, and is still the sole editor of the above-named *Archiv*. He likewise set the different associations on foot, and it is no fault of his if pharmacy in Denmark is not officially recognized as equal with medicine.

HYDRATE OF CHLORAL AS A SOLVENT, AND SUGGESTIONS CONCERNING ITS EMPLOYMENT.

By Robert F. Fairthorne.

In an article published in October, 1871, on page 446 of this Journal, I suggested the use of chloral, when dissolved in oil, as a topical application, and thinking that its power as a solvent might open the way to a greater extent of usefulness, I would draw attention to its value when thus employed in connection with the alkaloids and a few other substances.

A solution consisting of nine parts of hydrate of chloral and three of water I find capable of dissolving the following substances to the extent named:

One grain of morphia is dissolved by a portion of the liquid containing twelve grains of the hydrate, one grain of veratria by a portion containing five grains, and one grain of atropia by a portion containing twenty grains.

These active principles should be in powder, mixed with the solvent in test-tubes, and heated by means of a water-bath, with occasional agitation.

The solutions thus made are in a convenient form for employment, either alone or when mixed with oils, ointment, or with glycerin. Camphor, too, is freely dissolved by them, and in some cases can be added to them with advantage.

Glycerin I find to be a convenient agent for forming solutions with chloral and the above-named substances, and the following will be found, when properly combined, to produce permanent and elegant preparations, viz.:

Chloral Glycerite of Morphia.

℞.	Morphia (Powd.),	5 grains.
	Chloral hydrate,	1 drachm.
	Glycerin,	half a fluidounce.

M. Sec. art.

Chloral Glycerite of Veratria.

℞.	Veratria,	5 grains.
	Chloral hydrate,	1 drachm.
	Glycerin,	half a fluidounce.

M. Sec. art.

Ointment of Chloral and Veratria.

(Corresponding in strength to the Ung. Veratriæ, U. S. P.)

℞.	Veratria,	10 grains.
	Chloral hydrate,	℥i.
	Water,	6 drops.
	Lard Ointment,	half an ounce.

M. Sec. art.

Chloral Glycerite of Morphia and Camphor.

℞.	Morphia,	5 grains.
	Chloral,	
	Camphor,	each 1 drachm.
	Glycerin,	half a fluidounce.

M.

Lotion of Chloral and Iodine.

℞.	Iodine,	20 grains.
	Iodide of Potassium,	6 grains.
	Glycerin,	1 fluidounce.
	Chloral hydrate,	2 drachms.

M. Sec. art.

Chloral can also be combined with collodion, in which it dissolves after the addition of a few drops of alcohol.

COMMENTS UPON THE PROCESS OF PERCOLATION.

By J. B. Moore.

In the last number of this Journal, I published a paper on "The Extract and Fluid Extract of Guarana," etc., in which a formula for each of the two preparations was given. In constructing these formulæ and processes, it may have been observed by the reader that I did not adopt the tedious and no less troublesome and uncertain method of percolation recommended by the Committee of Revision of our present Pharmacopœia, but have adhered to the effective and satisfactory process of the late edition of that work.

As I consider that, in making either a solid or fluid extract of any drug, it is of primary and paramount importance that every care and precaution be observed to insure, beyond peradventure, the thorough and complete exhaustion of the substance. To insure this in all cases, a certain amount of menstruum is absolutely necessary, and even then, unless the operator be an experienced hand and an adept in the process of percolation, in many cases the result may be uncertain; at least, this has been my experience in careful attention to the process ever since fluid extracts began to become popular. And in the hands of very many, to whom the manufacture of fluid extracts will be entrusted, the thorough exhaustion of the drug will rarely be accomplished by the process of the Pharmacopœia, and with the small proportion of menstruum which it directs for these preparations.

The variable condition of different samples of powder of the same drug, when moistened by the quantity of menstruum directed in each particular case; the care, experience and judgment requisite, under any circumstances, in the preparation of the powder for packing, and in properly packing it when prepared, to insure a correct percolation, together with other circumstances involved in the process which might be mentioned, all tend, in an important degree, to render the result very uncertain, unless in the hands of experienced and skilful operators, of whom, unfortunately, there are comparatively few. There will also, I have no doubt, be many country physicians who will undertake this important process for the purpose of supplying themselves with fluid extracts for use in their own practice.

In the face of these considerations, and my own sincere convictions of the inadequacy of the officinal process for making reliable fluid extracts, I could not conscientiously adopt that process in any

formula that I should offer for the manufacture of any preparation of this class; nor do I believe that the officinal process for fluid extracts in our recent Pharmacopœia meets the approval of the majority of the truly practical pharmacists of this country. I heartily endorse almost every word written by Dr. Squibb in disapproval of this part of the Committee's labors. It is, I consider, an unfortunate change, and is certainly a retrograde step; for it must be remembered that, after the four days' preliminary maceration directed in the officinal process is concluded, percolation proper has just began, and the process may not be completed for a day or two more, which prolongs the operation to almost half the period required in the old maceration process for tinctures; consequently this most wonderful and excellent process is shorn of its greatest beauty. The great merit of the former officinal process for percolation consisted in the rapidity with which highly concentrated solutions of the active properties of any drug could be obtained—a rapidity which excited the admiration and almost the wonder of the intelligent pharmacist himself.

Pharmacy, it must be remembered, is no longer in its infancy in this country; it has not only thrown off its swaddling clothes, but has also outgrown the habiliments of its youth, and now steps forth in the full attire of manhood, and its ambitious and progressive spirit will not allow it to sanction any backward step without a murmur.

In this enlightened age of steam and telegraph, and, I might almost say, of aërial navigation, it is hard to ask the ambitious and progressive "Young American" pharmacist, after he has for years enjoyed the benefits and advantages of the modern and expeditious method of *direct* percolation, with all its beauties and excellencies, to return, as it were, to the very brink of the old and obsolete maceration process, of which the present officinal one for percolation is simply a slightly modified form. I can assure my readers that it will be with reluctance that he will thus return to the slow and antiquated way of doing things of his ancestors. You might as well ask him, if he desired to reach a certain point by public conveyance, to take a stage-coach in preference to a steam-car, or to take a trip in a Conestoga wagon, with the inducement held out of saving half fare, even though he be not in a hurry to complete his journey. Such is the temper of our American people, a little saving of expense is no inducement to endure slow and tedious processes of any kind.

Besides, the process presented to us by the Pharmacopœia for the

manufacture of fluid extracts, I consider an attempt to economize menstruum, at the risk of sacrificing the reliability and uniform strength of one of the most important class of our medicinal agents. The old direction, "Continue the percolation until the drug is exhausted," should never have been abandoned, but should have been adhered to as a *maxim* in all processes of percolation, in making all medicinal extracts, either fluid or solid, *no matter what it costs.* This would insure the thorough exhaustion of the substance. Then the pharmacist who best understands his business, and is most skilled in the process, could make his preparations the cheapest, and thus reap the benefits of his knowledge and experience in his economy in the use of menstruum—an additional stimulus to the acquisition of a more perfect knowledge of the process.

If the Committee had sufficient faith in their new-fangled plan for making fluid extracts, why did they not adopt it as a means of economy in the preparation of the solid extracts also? I cannot see why it is not as equally applicable in the one case as in the other. There is no part of the Committee's labors of which I so wholly disapprove as this.

Admitting, for instance, that the new process would yield reliable fluid extracts, I believe there are few pharmacists but would feel loth, for all that could be saved by such an economical process, to have a lot of percolators, with their contents, sitting about in their stores or laboratories for five or six days at a time, with the liability of their being capsized; and the process cannot be conducted so well in the cellar, unless in warm weather, owing to the lower temperature diminishing the solvent power of the menstruum.

The amount of alcohol saved, to the majority of pharmacists, in all the operations in making fluid extracts for their own use, would be but a mite, a thing too trifling to be considered in comparison with the importance of having good and reliable preparations, as, by proper management in all large, or even in the smaller operations, especially when a strongly alcoholic menstruum is used, much of the alcohol may be recovered by the use of the still.

Furthermore, I cannot see the necessity for so prolonged a maceration as is directed in the officinal process. I have paid some attention to the matter, in a multiplicity of operations, with a view to test this very point, and I never could perceive any advantage in extending the preliminary maceration beyond twenty-four to thirty-six hours,

even when deemed necessary in the case of substances that are toughest, most impenetrable and compact in texture, such as nux vomica and other similar substances, while in the great majority of cases from eight to twelve hours will suffice. This will give ample time, as I have remarked in a former paper (Art. Syrup Senega, *Am. Journ. Pharm.*, May, 1870), "for the powder to expand and its fibres to become thoroughly permeated and softened by the menstruum," and also for the solvent power of the menstruum to become exhausted, which is all that is requisite.

It must be remembered, too, that the manufacture of fluid extracts in drug stores is not an every-day operation; it is therefore impossible for the pharmacist to make himself familiar with, and to remember from time to time, the amount of pressure required for properly packing the various kinds of drugs; so that even the most skilful operator will occasionally make a mistake, and get his powder either too tightly or too loosely packed. In the former case, only a too tardy percolation may be the result, while in the latter an imperfect and unsatisfactory result is attained, a circumstance to be greatly deprecated; and in the new process there is no provision made to remedy or to compensate for such a defect or failure.

If the officinal process for percolation is so economical and menstruum-saving, why do not our large wholesale manufacturers of fluid extracts adopt it? for, certainly, if there is any class of manufacturers who would be likely to seek for and adopt any economical process, that would yield *good* and *reliable* preparations, it would be the wholesale manufacturers. But, upon inquiry among our largest and most reputable manufacturers of this class of products, in this city, I find that none of them have adopted, in their establishments, the officinal process for fluid extracts. These gentlemen have too much at stake to rely upon any untrustworthy or uncertain process in the manufacture of their products.

Another very objectionable feature attending the long maceration in funnels or other percolators, directed in the officinal process, is the constant liability to loss of menstruum by evaporation during this long period of repose, and especially is this apt to be the case in hot weather, if a strongly alcoholic menstruum be used, as the subtle vapor of this fluid is hard to imprison. I have found India rubber cloth, when tightly secured over the top of the percolator, both convenient and useful for the purpose, but even this will sometimes per-

mit loss of vapor. When preliminary maceration is conducted in bottles, there is no difficulty attending the process at any temperature.

In operating by the officinal process I have, on several occasions, experienced trouble in consequence of loss of menstruum during maceration, and the consequent disarrangement of the mass in the percolator.

The officinal formulæ for fluid extracts limit the percolate to twenty-four fluidounces, just one-half, or even less than one-half the quantity that was employed in the late Pharmacopœia, to exhaust sixteen troyounces of drug; and the four days' *soaking* of the drug in that small portion of the menstruum which can find room in contact with the particles of the powder are supposed to compensate for the action of the other pint and a half of menstruum that was formerly considered necessary to exhaust the substance.

This plan, in part, is based upon the supposition that the first pint of percolate obtained from sixteen troyounces of a drug, in making a fluid extract, *if the process has been well managed*, contains about four-fifths of the entire soluble, active properties of the substance under treatment. But, if the process should *not* be well managed, then what will be the condition of things, and what the result? What the solution to this problem is, will, in many cases, be hard to say, and I will only leave it to the intelligent and conscientious pharmacist to conjecture. And, pray tell me, also, how often will the process be well managed in the hands of the majority of those who will undertake the apparently simple process?

When I am percolating a substance in making a fluid extract, and when, after I have secured the prescribed quantity of percolate, I still find the fluid dropping from the percolator quite highly colored, and with the characteristic taste and odor of the drug strongly marked—as has been my experience over and over again in working the officinal processes—I can never rest satisfied, nor can I conscientiously allow myself to stop here, I feel, if I did, as though my finished extract will be deficient in strength, or at least of very indefinite composition. Yet, it may be said that the drug is practically exhausted of all that is really medicinal. This *may* be so, but appearances are against such a supposition or inference, and I cannot, under such circumstances, but be dissatisfied with such results, and for the sake of calming my fears and satisfying my ambition, I always feel

tempted, for all that it will cost, to continue the percolation until I have stronger evidence that the drug is exhausted.

There is also another prominent feature in the officinal process for fluid extracts, of which I desire to say a word, and that is in regard to the use of glycerin in nearly all these formulæ.

I have had much experience in the use of glycerin in practical pharmacy, and there is no one who holds a higher opinion of it than I do, both as a solvent and preservative of the active properties of many drugs; but, I must confess, I have never found it so nearly a universal solvent and preservative as the authors of the formulæ for fluid extracts of our Pharmacopœia seem to have discovered. In reviewing these formulæ, I am led to believe that glycerin must possess latent qualities, in this respect, that have escaped my notice. Glycerin is certainly an agent of inestimable value in pharmacy, but I do not approve of its indiscriminate use—and especially when em ployed as a menstruum—in percolation in making fluid extracts, when the object is to obtain saturated or highly concentrated percolates. In such cases, it must be handled with judgment, and *only* by the hand of *experience*, or it *may* prove a very dangerous impediment to success rather than a means thereto. In the formulæ for fluid extracts in our Pharmacopœia, I think it has been used with a too lavish hand. There are some of these formulæ from which, I cannot but believe, it would have been better to omit it.

It should be held as a cardinal principle, that glycerin should never form a part of any menstruum for fluid extracts, unless it is known to be a better solvent for the active properties of the drug to be exhausted than either alcohol or water, or these two combined, for, by reason of its greater density, it in a measure blunts, as it were, and interferes with the solvent action of the latter liquids. And, when its presence is necessary as a solvent, or when its retention in the finished product is desirable or necessary as a preventive against decomposition or deposit, it must be employed, as I have before remarked, with judgment. It can rarely, in any case, be used with advantage in greater proportion than from one-eighth to one-fourth of the bulk of the menstruum, notwithstanding its wonderful solvent power over rhubarb, cinchona and wild cherry bark, and other articles that might be named. Yet, if it forms just a little too large a proportion of the menstruum, even in such instances, it enfeebles the action of the menstruum and percolation proceeds in an unsatisfactory manner.

There are many of the officinal fluid extracts, however, in which glycerin has been very judiciously employed, not only in view of its solvent action, as a part of the menstruum, but also in view of its presence rendering the finished preparations more stable and less prone to change or deposit by keeping.

Much has been said and written within the last decade upon the subject of percolation and the manufacture of fluid extracts, and many suggestions and new plans have been proposed, but there has been none as yet offered that is worthy to supersede the late officinal process. It, of course, has its defects, and is still susceptible of much improvement, but with all its faults I decidedly prefer it to any of the new plans yet offered.

Among these latter there is one especially deserving of notice. I refer to that one proposed by Dr. Squibb, which is known by the title of "Repercolation." This plan, like the present officinal process, has for its object and chief merit the economy of menstruum. Although it may be a very elaborate, and, in scientific and careful hands, perhaps, a very thorough process, yet it is, unfortunately, marred by the very objectionable feature of being troublesome, very complicated, and requiring for its performance an amount of experience and skill not possessed by ordinary pharmacists, and I am satisfied that there are but few who would ever adopt it in the ordinary operations of a retail store. It might, perhaps, be advantageously employed, as a means of economy in the use of menstruum, in the extensive operations of large manufacturing establishments like that of Dr. Squibb, with one of his superior skill to supervise its management; but, like the officinal process, for all that could be saved by it in the small operations of the retail pharmacist, it would not pay for the risk of failure and the extra trouble, care and attention necessary to insure successful and satisfactory results.

No new process which contemplates so radical a change in any important operation of pharmacy as that of percolation should ever be adopted by the Revisory Committee of our Pharmacopœia until its merits have been thoroughly tested and its claims well established.

The Committee, in the preface to their work, say, "it is no part of its mission to lead in the path of discovery. It should gather up and hoard for use what has been determined to be positive improvement, without pandering to fashion or to doubtful novelties in pharmaceutical science." But I am sorry to say I think they departed

from these wise and conservative principles when they accepted and adopted their new process for percolation, which at the time of its adoption was simply a fledgeling in pharmaceutical practice.

Philadelphia, November, 1874.

GLEANINGS FROM THE EUROPEAN JOURNALS.

By the Editor.

Cinnamic Acid in Tea.—Dr. H. Weppen, while operating upon ten kilograms of tea-leaves with the view of preparing coffeina, was unable to get this alkaloid by the ordinary process, but obtained over five grams, about 0·1 per cent., of cinnamic acid. The leaves had the odor of ordinary tea, and were smaller than those of Hyson and Pecco tea, but otherwise agreed entirely with *Thea chinensis*. The author suspects a fraud, practised in China, and that this tea had been flavored with storax or a similar substance.—*Archiv d. Phar.*, 1874, *July*, *pp.* 9–14.

Leras' Soluble Phosphate of Iron, a nostrum manufactured in Paris, was analyzed by Dr. H. Vohl, of Cologne, and found to be a solution of five grams ferric sulphate and ten grams crystallized pyrophosphate of sodium in one liter of distilled water.—*Ibid.*, *pp.* 14–16.

Preparation of Iodates and Iodic Acid.—Prof. E. Reichardt recommends to treat iodine or iodide with chlorinated lime, when iodate of calcium is rapidly formed and partly precipitated; after the oxidation is completed, the whole is faintly acidulated, heated to boiling, and iodate of calcium, $CaI_2O_6,5H_2O$, readily obtained pure by crystallization. On exposure, the calcium iodate loses water; to prepare iodic acid, it is therefore necessary to determine the exact amount of calcium in each sample of the iodate, and to decompose it by its equivalent of sulphuric acid, removing the calcium sulphate and crystallizing the iodic acid.—*Ibid.*, *Aug.*, *pp.* 109–111.

Test for Veratria and Morphia.—While experimenting with Schneider's* test for morphia, Dr. H. Weppen observed that if veratria is mixed with twice to four times its weight of sugar, a little sulphuric acid will at first produce merely a light-yellow coloration, which, after a while, changes into green, and finally to a beautiful blue; the green and blue colors are more rapidly produced if, to the acid mixture, a

* American Journal of Pharmacy, 1873, p. 545.

little water is very cautiously added, or, better still, if a small drop of bromine water is used. The latter increases also the delicacy of the morphia test to such an extent that 0·00001 gram is plainly colored rose-red, of the same depth as 0·0001 gram of morphia, if tested without bromine water. The author regards this test as being of equal value with the reaction with ferric chloride and with Froehde's test (molybdate of sodium dissolved in concentrated sulphuric acid), and to even possess the advantage that pure morphia is not requisite, and that it will be successful even if applied with little skill.—*Ibid.*, *pp.* 112–116.

Iodine as a Test for Volatile Oils.—K. Calmberg reports that the relative proportion of iodine and oil has a marked influence on the result; if three or four drops of peppermint are added to about half a gram of iodine, the mixture will become heated and evolve vapors, which is not the case if, to little iodine, much oil of peppermint is added.—*Ibid.*, *p.* 127.

Saccharate of Iron.—E. Hoffmann recommends the following process as an improvement on the one officinal in the German Pharmacopœia (see *Amer. Jour. Pharm.*, 1873, p. 161):

10 parts solution of ferric chloride, spec. grav., 1·48, containing 15 per cent. metallic iron;
4¼ p. powdered sugar, dissolved in an equal weight of water;
12 p. pure carbonate of sodium, dissolved in 24 p. of water;
5 p. caustic soda or 6 p. potassa solution, spec. grav. 1·33;
400 p. boiling water, and
12 p. of powdered sugar.

The ferric chloride and sugar solution are mixed in a large porcelain dish, and the carbonate of sodium is rapidly added in four or five portions, permitting the evolution of carbonic acid after each addition; the caustic alkali is now added, when the precipitate will completely dissolve, and after a few minutes the solution is poured into the boiling water. The occurring precipitate settles readily, is washed six times with hot water by decantation, collected upon a filter, or upon muslin covered with filtering paper, drained and slightly pressed. After the addition of the powdered sugar to the precipitate, the mixture is evaporated in a porcelain dish by means of a steam-bath, and when of the consistence of honey, poured upon flat plates and exsiccated in the drying closet. Enough sugar is now added to make the

whole weigh fifty parts, triturated with the addition of a few drops of alcohol, and again dried.

If, in the above formula, glycerin is substituted for the sugar a glycerite is obtained, which, in the author's hands, has kept entirely unchanged for two years. Made to contain 10 per cent. of iron, it has a handsome brown-red color, and the consistence of a soft extract; if representing 3 per cent. of iron, it has the consistence of glycerin.

This glycerite is a very delicate test for grape sugar. Suitably diluted and heated with a trace of the latter, ferrous chloride is formed, which is recognized, after supersaturation with hydrochloric acid, by the blue color produced with ferridcyanide of potassium. Cane sugar, similarly treated, does not show this reaction.—*Ibid., pp.* 134–139.

Adulterations and Substitutions.—E. Heintz enumerates the following, which he met in the German drug-market: Formic acid spec. grav. 1·2, was found to be only 1·12, and its actual value was therefore little more than one-third of its pretended strength. Impure carbolic acids sold as containing 50 per cent. of acid, were found to contain only 15 and 25 per cent.; another sample, said to contain 60 per cent., yielded only 35 per cent. of carbolic acid. One lot of nine different volatile oils, had to be returned, all proving to be adulterated. Prepared oyster-shell was found to consist merely of burned bones.—*Ibid., p.* 142.

Iron by Hydrogen.—P. Carles estimates the amount of metallic iron in this preparation by operating upon 0·1 gram, mixed with 5 grams of hot water in a flat-bottomed dish, with a solution of 4·53 grams of iodine and 5 grams of iodide of potassium, in 100 c.c. water. 1 c.c. of this solution combines with 0·01 gram of iron. If the iron is greasy, has been considerably heated, or is superficially oxidized, the application of heat to the mixture may have to be repeated. That all the iron has combined with the iodine, is evidenced by the residue, which remains, not evolving hydrogen with muriatic acid. A separate portion of the iron is treated with hydrochloric acid, and the resulting gas passed through a solution of sugar of lead, in order to estimate the sulphur as sulphide of lead. The undissolved residue contains sand, carbon, &c.

The author gives the following analytical results of different samples:

1. Silica and carbon, 0·90; iron, 75·0; oxide of iron, 24·0; sulphide of iron, a trace.

2. Silica and carbon, 1·10; iron, 52·0; oxide of iron, 46·50; sulphide of iron, 0·20.

3. Carbon and sand, 5·30; iron, 58·0; oxide of iron, 34·50; sulphide of iron 2·07.

4. Carbon and silica, trace; iron, 99·0; oxide of iron, sulphur, sugar and loss, 1·0.*

5. Porphyrized iron of unknown origin, is with difficulty assayed by the proposed method: Carbon and silica, 7·10; iron, 70·0; oxide, 20·10; sulphide, 2·70; phosphorus and loss, 0·10.

6. Carbon and silica, 0·80; iron, 58·70; oxide, 40·0; sulphide, 0.20.

7. On being dissolved in muriatic acid, it evolved much gas of a disagreeable odor, containing carburetted and phosphuretted hydrogen. Residue, 0·40; iron, 54·0; oxide, 45·0; sulphide, 0·40.

8. Carbon and silica, 0·02; iron, 73·0; oxide, 24·0; sulphide, 2·90.

9. Carbon and sand, 11·59; iron, 32·0; oxide, 55·20; sulphide, 1·20.

The author concludes that the reduced iron of commerce is not carefully prepared, and suggests that it be replaced by other ferruginous preparations, which the pharmacist may readily obtain in a state of purity, which can be assayed with exactness, and whose absorption is quite certain.—*Jour. de Phar. et de Chim., Sept.*, 1874, pp. 178–181.

RAPID PREPARATION OF MERCURIAL OINTMENT.

By George Bayle.

The longest and the most fatiguing of all pharmaceutical operations is the extinction of mercury in preparing mercurial ointment. To shorten the time a great number of processes have been successively proposed. Among the most successful are those by M. Le Boeuf and M. Pons, and that which consists in extinguishing the mercury in a small quantity of old mercurial ointment. However, in practice these

* This iron had been mechanically reduced to powder, and then inclosed in gelatine capsules, to prevent oxidation. Each capsule is represented to contain 0·1 gram of iron, but by carefully weighing the contents of three larger and three smaller capsules, the following amounts were obtained: 0·065, 0·061, 0·040, 0·035, 0·041 and 0·040.

different methods do not give the expected result of quick operation, without finally introducing foreign non-volatile substances into the mercurial ointment.

In following exactly the manipulations indicated hereafter, a faultless ointment, corresponding to the requirements of the new Codex, is always obtained in fifteen minutes.

Put into a mortar 100 grams of mercurial ointment from a previous operation, and 500 grams of mercury; with rapid trituration add gradually 30 grams of sulphuric ether, and in a few minutes the mercury will be divided into imperceptible globules; then add about 100 grams of lard, and after several minutes of vigorous trituration, examine in the usual way whether the extinction of the metal has been effected. If some globules remain visible, the addition of a little ether and some trituration will complete this portion of the process. The ointment is then finished by adding the requisite quantity of lard.

It is very evident that the rapidity of the manipulation is the same, whatever quantity of the ointment is to be obtained.

By using benzoïnated lard, 960 grams, with which 40 grams of white wax have been incorporated at a moderate heat, the ointment will in every respect be identical with that of the formula of the new Codex. In winter the ointment is sufficiently consistent without the addition of wax.—*Bull. Soc. Roy. de Phar. Brux.*, 1874, *p.* 286, from *Jour. de Chim. Méd.* C. J. M.

ON A FALSE WHITE GINGER.

By M. Patrouillard, Pharmacist at Gisors.

Guibourt, in his "Histoire naturelle des drogues simples," says about white ginger: "It is possible to prepare a false white ginger by peeling the bark of grey ginger and bleaching it with sulphurous acid, chlorinated lime, or merely coating it externally with lime."

Some time ago I found in the drug market ginger bleached by the aid of one of the substances named above. The ginger in question was of a dull white, and the outside was not striated longitudinally like the genuine white ginger. It is covered with a white dust, which comes off very easily by touching it or scratching it with a knife. On examining this powder through the microscope, it will show a small quantity of granular, spherical, or orbicular, colorless bodies,

which, however, turn deep blue when impregnated with tincture of iodine; they are, therefore, of an amylaceous nature. There are likewise many opaque, very small, irregular fragments, on which the tincture of iodine has no action apparent under the microscope.

A certain quantity of this powder was treated with dilute acetic acid. The liquor, containing an excess of the acid, gives immediately a white precipitate with oxalate of ammonium, consequently insoluble in acetic acid, but easily soluble in chlorhydric acid. This precipitate is, therefore, oxalate of calcium.

These experiments show that the powder detached from the ginger consists mainly of a calcium compound, undoubtedly carbonate of calcium, and that the ginger was whitened with lime. This confirms the views of Guibourt referred to above. Such a falsification should not be tolerated; first, because this false white ginger is much less active medicinally than the genuine, and, secondly, because its commercial value is five times less than the genuine white ginger.*—*Pharm. Jour. and Trans., April*, 1874, *p.* 831. C. J. M.

NEUTRAL HYDROBROMATE OF QUINIA.†

By M. Boille.

Two years since, the author brought under the notice of the French Academy of Medicine an acid hydrobromate of quinia. Further investigation of its properties has led him to the preparation of the neutral hydrobromate, which he considers to be far superior to the officinal quinia sulphate, both as to solubility in water and richness in quinia. The neutral hydrobromate is prepared by double decomposition of bromide of barium and neutral sulphate of quinia, and is thus easily obtained pure and free from chloride; the great solubility of bromide of barium in alcohol facilitating the removal of any chloride, which is insoluble. The two salts are dissolved separately in alcohol, and the solutions filtered. The neutral sulphate of quinia solution is gradually added in slight excess to the bromide of barium solution, until a precipitate ceases to form. The solutions, diluted with water,

* Mr. Th. Gardside has recently examined a sample of artificially-bleached ginger. The inorganic coating gave by analysis the following results for 100 parts: chloride of calcium, 4·98; carbonate of calcium, 87·12; sulphate of calcium, and other salts, 7·90.

† Journal de Pharmacie et de Chimie, vol. xx, p. 181.

are distilled to recover the alcohol, afterwards filtered, to separate the sulphate of quinia which has been precipitated by the water, and then concentrated sufficiently to induce rapid crystallization. The addition of water is indispensable for the concentration and crystallization; the hydrobromate, being soluble in alcohol in all proportions, redissolves as the alcoholic liquor is concentrated.

Neutral hydrobromate of quinia is also obtained easily by dissolving hydrate of quinia in weak hydrobromic acid. Upon cooling the salt forms beautiful nacreous crystals; redissolved several times in water, it crystallizes in the basic state.

Neutral hydrobromate of quinia has for its formula:

$$C_{20}H_{24}N_2O_2,HBr,H_2O.$$

	Experiment.	Theory.
Water,	4·80	4·25
Bromine,	18·26	18·91
Quinia,	75·20	76·59

The formula for acid hydrobromate of quinia is:

$$C_{20}H_{24}N_2O_2,2(HBr),3H_2O.$$

	Theory.	Experiment.
Water,	10·00	10·00
Bromine,	24·62	28·84
Quinia,	60·00	50·60

The crystallization of the acid hydrobromate of quinia in well-defined regular facets distinguishes it from the hydrochlorates, which crystallize silky in filaments. The former crystals do not become resinous in the presence of an excess of hydrobromic acid, and are prepared by dissolving quinia in an excess of hydrobromic acid; they are soluble in water and alcohol.

The solubility of neutral hydrobromate of quinia is stated by the author to be very remarkable, it being soluble in five times its weight of water. This solubility of the neutral salt he considers to be a property of high therapeutic value, as it should be better tolerated than the neutral sulphate, and more active, being more quickly absorbed. More soluble and more rich in quinia than the acid sulphate, he thinks it might replace the latter advantageously in various liquid preparations, without causing the least irritation of the mucous membrane. Further, it combines the properties of bromine and the salts of quinia, whilst its easy absorption allows of its internal admin-

istration. On the whole, M. Boille considers that its properties give it a great superiority over all other compounds of quinia.—*Pharm. Journ. and Trans., October* 17, 1874.

SYRUP OF BROMIDE OF IRON.

By M. H. Stiles, M.P.S.

I noticed in a recent number of the Journal a formula for syrup of bromide of iron, taken from a French paper on the subject. About six weeks ago, I had occasion to prepare some of the syrup for a prescription. This was made to contain three grains of bromide of iron in each fl.ʒi., which, from inquiries I have since made, is the strength usually recommended in this country.

The syrup made by M. Prince is only about one-seventh this strength, and is scarcely in accordance with English ideas of what such a preparation should be. The following is the process I adopted:

Take of—

Thin Iron Wire, free from rust, ...	½ oz.
Bromine, ...	320 grs.
Distilled Water, ...	1 oz.

Put the wire and water in an 8-oz. flask, the lower portion of which is placed in a vessel of cold water, add the bromine gradually, corking the flask after each addition, and taking care that one portion is neutralized before another is poured in. When all the bromine has been added, heat the flask gently until the brown color disappears, and filter the solution, whilst hot, through paper; wash the wire with a little distilled water, filter the washings, add them to the filtrate, and make the resulting liquid measure fl.ʒii. Mix this with fl.ʒxvi. of syrup. One fluid-drachm contains three grains of $FeBr_2$.

If the flask be not kept cool, and the process controlled in the manner directed, the action becomes so violent that a considerable portion of the bromine is lost.

Bromide of iron is also given in combination with bromide of quinia or bromide of strychnia, or with both, the amount of these in fl.ʒi of the syrup being one grain and $\frac{1}{3}\frac{1}{2}$ grain respectively.—*Pharm. Journ. and Trans., August 29th,* 1874.

Hull, July 27th, 1874.

ON SOME PREPARATIONS OF ERYTHROXYLON COCA.

By E. B. Shuttleworth.

Some time ago, a sample of coca leaves, weighing several pounds, was forwarded to the writer, and was accompanied by a request that

experiments should be made with a view of determining the most eligible form in which the drug might be administered. As the coca plant is coming more frequently into notice, and as its powerful remedial properties favor the idea that, sooner or later, it will be introduced into the Materia Medica, I have thought it advisable to offer a record of the result of these experiments, together with that of others made for the purpose of ascertaining the best formulæ for possible preparations of the drug.

In devising formulæ of this kind it is essentially necessary that the nature and properties of the active principle or principles of the drug operated upon be well understood. The literature of coca does not, however, afford information of as precise and thorough a character as might be desired, but, for practical purposes it may, perhaps, be deemed sufficiently definite. Niemann * made a proximate analysis of the plant, and gives, as its constituents, a crystallizable basic substance (cocaina), a volatile odoriferous substance, a peculiar tannin (cocatannic acid) and a waxy body termed coca-wax. Stanislas Martin † found a peculiar bitter principle, extractive, chlorophyll, a substance analogous to theina and salts of lime. Maisch ‡ was led to think that the leaves contained a volatile alkaloid. This supposition was subsequently confirmed by Lossen, § who isolated this principle, and, at the suggestion of Woehler, who was associated with him in these investigations, named the new alkaloid *hygrina*. Lossen also found that cocaina, when heated with muriatic acid, was decomposed, benzoic acid and a new base, *ecgonia*, being produced. This fact operates against attempts to extract cocaina with acid liquors, and its importance was recognized by Lossen who recommended the abandonment of Niemann's plan, in which acidulated alcohol was employed, and the substitution of infusion with simple water.

Thus far, then, we have as important and tolerably well established constituents of the leaves, cocaina, hygrina, cocatannic acid, coca-wax, and a volatile oil, to which the odor of the plant is due; of these, the first-named alkaloid is undoubtedly that to which attention should be principally directed in any attempt to make a preparation representing the active medicinal properties of the plant.

* Arch. Pharm. ciii, p. 120 and 291, Chem. News, July, 1860.
† Jour. de Pharm. 1859, p. 283.
‡ Am. Jour. Pharm. 1861, p. 496.
§ Ann. Chem. Pharm. cxxi, p, 347.

The characteristics and properties of the alkaloid may be concisely given as stated by Watts: * "Cocaina crystallizes in small, colorless, inodorous poisons; it has a slightly bitter taste, and produces temporary insensibility of the part of the tongue with which it comes in contact. It is soluble in 704 parts of water at 12°C., (53·6°F.) more soluble in alcohol, and still more so in ether. It melts at 98°C., (208·4° F.) and solidifies to a transparent mass, which gradually becomes white and crystalline. At a higher temperature, a very small portion appears to volatilize undecomposed, but the greater portion is decomposed, yielding ammoniacal products. Cocaina dissolves without color in strong nitric, hydrochloric and sulphuric acid; the last solution becoming black when heated. It is strongly alkaline, dissolves in dilute acids, and neutralizes them completely." In most of its reactions cocaina resembles atropia, but that with carbonate of ammonia is different, and the melting points of the two alkaloids are not coincident. The formula assigned to it is $C_{16}H_{19}NO_4$.

Hygrina, the other alkaloid constituent of coca, assumes, at ordinary temperatures, the form of a thick oil, of yellowish color. It possesses a strong alkaline reaction, a burning taste, and an odor of trimethylamin. It combines with hydrochloric acid, forming a deliquescent salt. It is to some extent soluble in water, and dissolves readily in alcohol and ether. It does not appear to be poisonous.

Those points which bear directly on the subject of this paper, and which are embodied in the above particulars, are, that coca contains two active principles on which its medicinal virtues depend; that one of these is mutable in the presence of acids, the other volatile, and, therefore, liable to be dissipated by heat; and that both are soluble in water and alcohol. We are not, however, informed in regard to the peculiar state of combination in which these alkaloids exist in the plant. That they are combined with some acids appears probable from the fact that the addition of a little lime, or other alkali, develops, to a much greater extent, the characteristic taste, and also the activity of the drug. This has been recognized, for ages, by the millions of persons addicted to the use of coca. Von Tschudi, Pöppig, Herndon, Weddell and other travellers affirm that, in prepearing the leaves for chewing, the addition of lime, *llipta*, the ashes of plants, as *Chenopodium Quinoa* or other alkaline substance, is generally made. A simple infusion is, however, often employed, and

* Dictionary of Chemistry, i, p. 1059.

the full effects of the medicine appear to be realized from its administration. This is the oldest, and almost the only preparation of coca which has been used, and to this attention may, with propriety, be first directed.

Infusum Cocæ.—Take of coca, bruised, one ounce; boiling water, ten fluidounces. Infuse in a covered vessel, for one hour, and strain.

This preparation resembles in appearance, and odor, an infusion of ordinary green tea. Its taste is slightly bitter and alkaline, recalling infusion of spearmint. The benumbing sensation, experienced when chewing the leaves, is not so perceptible in this infusion. By applying to the dregs a slight pressure, about eight ounces of liquid may be recovered. Each ounce of the preparation will therefore be equivalent to a drachm of the leaves. The dose may be from one to two fluidounces.*

Ext. Cocæ Aquosum.—Coca in moderately coarse (No. 40) powder; water a sufficiency. Macerate the coca with four times its weight of water, for 12 hours, at a temperature not exceeding 120°F. Transfer to a percolator and exhaust with water. Evaporate, by means of water-bath, to the consistence of an extract.

The extract, thus prepared, is of a dark-brown color, and bitter but not very characteristic taste, 100 parts of leaves yield 36 parts of extract. The dose may be from 15 to 30 grains.

Ext. Cocæ Alcoholicum.—Coca in moderately fine (No. 50) powder; alcohol, sp. gr. ·838 a sufficiency. Moisten the powder with alcohol and pack tightly in a percolator. Add alcohol, and continue the percolation until the powder is exhausted. Evaporate the percolate, by means of a water-bath, at a temperature not exceeding 150°F., until the extract is of proper consistence.

This extract is much superior to that prepared by water, possessing, in the highest degree, the characteristic taste and odor of the plant; and, as far as I have been able to ascertain by experiments upon myself, possessing also in full its medicinal properties. It is of a green color, resembling extract of Indian hemp, and is appar-

* A description of the therapeutical effect of coca does not properly come within the limits of this paper. But for information regarding the remedy, as administered by infusion, the reader is referred to a Prize Essay on the subject, written by Dr. Mantegazza, of Milan, and of which abstracts may be found in the *Pharm. Journ. and Trans.*, 1860. and the *Druggists' Circular*, vol. iv, p. 253.

ently resinous in character. This characteristic is attributable to the coca-wax or other concrete oily substance with which the extract is mixed. When exposed to the air the extract does not harden, but slowly attracts moisture, becoming, in time, quite liquified. I regard this extract as one of the best forms in which coca can be administered. It can be readily formed into pills, and is perfectly reliable. The product from 100 parts of the leaves is 15 grains. The dose may be from 10 to 20 grains.

Ext. Cocæ Fluidum.—I have not had time to experiment upon this preparation, but would suggest, as a menstruum, alcohol of sp. gr. ·835 or ·838; the reservation of a portion of the peroclate equivalent to three-fourths of the weight of the leaves employed; and evaporation of the remainder, at a temperature not exceeding 150°F.

Tinct. Cocæ.—A tincture containing four ounces of coca to one imperial pint of proof spirit, or diluted alcohol, may be prepared by percolation, but such a preparation does not appear to be advisable or necessary. The large quantity of alcohol which each dose would contain, might entail therapeutical complications which it would be well to avoid. For administering the drug in a liquid form, the infusion will be found as simple and reliable as any, and by the addition of a small quantity of alcohol—say one-eighth part—it might be preserved from change for a reasonable length of time.—*Canadian Pharm. Journ., Nov.*, 1874.

NOTE ON THE ANALYSIS OF SUGAR.

By J. M. Milne, Ph.D.

The determination of the fruit sugar in samples of raw sugar is a matter of no difficulty in the hands of a careful manipulator, but there are a few points in detail which are deserving of attention. The usual plan, still in use in some laboratories, of taking a weighed quantity of the sample, dissolving in water, and making up to a given bulk, and using the liquid so obtained for the determination of the fruit sugar, is by no means always to be relied on. There is no doubt, I think, that many dark-colored sugars contain other substances (probably albuminous) besides the fruit sugar capable of reducing copper solution, and which must first be separated before correct results can be obtained. The method recommended by Fresenius, of adding lead acetate to the sugar solution till no further precipitate is formed, may

be advantageously employed for this purpose. While in some samples the same amount of fruit sugar is found in the solution *before* percipitation with lead as that obtained *after* the addition of that reagent, in others the difference is very marked. The following results, obtained from a sample recently submitted to me for analysis, will illustrate this :—The sugar solution *without* treatment gave 4·90 per cent. of fruit sugar, while in a measured quantity of the same solution *after* precipitation by lead acetate, the amount found was 3·27 per cent.

The following method of procedure answers very well, and is employed by me for *all* sugar samples in which fruit sugar is to be determined :—5 grms. of the sample are dissolved in a moderate quantity of water, and the insoluble matter allowed to subside. The supernatant liquid is then carefully poured into a 100-c.c. flask, the insoluble treated with more hot water, and finally collected on a small weighed filter, and the washing continued till the flask is about three-quarters full. To the sugar solution a little solution of tribasic acetate of lead is added, the whole well shaken, and the precipitate allowed to subside. The clear liquid is then tested with a drop or two of acetate, and, if no further precipitate is produced, the contents of the flask are cooled to the proper temperature, and finally made up to the mark with water, the whole being thoroughly mixed. When the precipitate has subsided, the liquid is passed through a *dry* filter into a clean, dry glass, and, when sufficient has passed through, is ready for the fruit-sugar determination. If it is desired to determine the extractive matters *directly*, the percipitate in the flask is washed several times by decantation, and then placed on the filter (previously weighed), and the washing continued till a drop of the filtrate no longer gives a precipitate with H_2S ; the filter and contents are then dried as usual. By the above method of treatment, a clear, colorless solution is always obtained, which renders the further operations with the copper liquor much easier.—*Chem. News, August 28th*, 1874.

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THE KOUMIS CURE.

The following interesting information respecting koumis, the method of its preparation, and the koumis establishments at Samara, is taken from a description written on the spot by a correspondent of the *Daily News*. Samara is the capital of a comparatively new government,

carved out of the neighboring governments of Simbirsk, Saratov and Orenburg, and situated on the left bank of the Volga, on the borders of Orenburg, on the high road to Asia.

"It has long been known that the Tartar tribes inhabiting what is generally known as Independent Tartary (no longer, however, since General Kaufmann's visit, particularly independent) and the nomad tribes scattered over its northern frontiers, the Turkomans and the Kirghis, as well as other tribes more or less akin to these, such as the half-nomad Bashkirs of Orenburg, all used fermented mare's milk, which they call koumis, not only as a beverage, but as a substantial portion of their daily food. It was reported to combine the nourishing properties of milk with the invigorating qualities of alcohol; indeed, among its other virtues it was said to exhilarate and to intoxicate. It came into the heads of some Russian medical men, of whom, I believe, Dr. Portnikoff, of Samara, to have been one of the first, that this koumis might possibly possess medical properties as well. It was observed that consumption and its cognate disorders were unknown among the tribes who habitually drank koumis. Starting from this observation, experiments were made on the *vilia corpora* of consumptive patients, and with highly beneficial results. Upon this Dr. Portnikoff started a koumis establishment at Samara. Its situation offered him many advantages. In the first place, from its position on the Volga, it was at least approachable, whereas Orenburg, the nearest spot where koumis could be said to be indigenous, was the *ultima thule* of the civilized world. This new establishment on the Volga was the means, therefore, of pushing the koumis outposts 300 miles westwards. In the next place, it was observed that pasturage at Samara was similar to that at Orenburg. It is supposed that the virtue of koumis consists in a great measure in the rich quality of the mare's milk, which again is dependent, not only on the race of mares, but on the pasturage on which they are fed. All these are propositions which are more or less vehemently affirmed and denied by the different camps into which koumis connoisseurs are divided. For my own part, without giving any opinion on so profound a subject, I would only venture in a very general way to observe that it is a very old idol of the human mind to mistake accidents for essentials, and to argue that, because things have been invariably seen in conjunction, they must necessarily be connected as cause and effect. However this may be, the *haute école* of koumis

connoisseurs maintain that koumis, to be efficacious, must not only be composed of the milk of thorough-bred Tartar mares, but of thorough-bred Tartar mares fed on the rich covil of the steppes.

"For covil (*Stipa pennata*) is the technical name of the grass which grows on the steppes, and which is the favorite food of the mares. It flowers prettily in a kind of white silvery wave for about a month at the beginning of June, and makes a not ungraceful ornament for the hair, especially of blondes. It is only the tender grass, not the flower, of the covil, which the mares graze on. In the midst of the covil the *Absinthum tartaricum* grows abundantly, emitting the sweetest smell. I could not help fancying that the two must form part of the vaunted pasturage of the steppes. It smelt so sweet that I thought if I had been a Tartar mare I should certainly have made it a *bonne bouche*. I was glad to hear that my error had been shared by a learned German doctor, who, writing *à priori* in his study in Livonia on the medical properties of absinth, suggests that as it is found in large quantities on the steppes where the Tartar mares graze, part, at any rate, of the virtue of koumis may be attributable to his favorite herb. It is to be hoped that the learned doctor's theory does not depend on his illustration, for it is, unfortunately, not founded on fact. The mares do not touch the absinth. The grass of the covil is their chief diet. The absinth, with its perfume, is there because the Tartar mare is an epicure, and she loves to regale one sense with the sweet odor of the absinth while the young blade of the covil administers to another.

"The Tartar horse about whom all this fuss is made is the most insignificant-looking brute dignified with the name of horse I ever saw. He exactly corresponds to the pictures one has seen, and the descriptions one has read, of the nondescript animals upon which the Cossacks were mounted during the invasion of France in 1812. Small, shaggy, and impoverished-looking, he hasn't the deviltry in his eye which distinguishes the little Shetland pony. It is only when he is in action that he gives you a taste of his quality. He then bristles up, buckles to his work, and you begin to perceive, when you have already been half a day's journey, the enduring qualities of the little animal you have been condemning. Many days' continuous travelling at the rate of 150 versts (100 miles) a day will give you some idea of his powers. Those who deny the indispensableness of covil will for the most part maintain that there is no saving grace in koumis proceeding from aught but the milk of thorough-bred Tartar mares.

"There are koumis establishments in Russia elsewhere than at Samara. At Czarsko Selo, in the neighborhood of St. Petersburg, as well as in the Sokslniki environ of Moscow, there are similar establishments. At both these places, although the precious covil does not flourish, the Tartar-bred mare is alone in vogue. I visited both these establishments, but fell in love with neither. In the first place the neighborhood of a capital (and both St. Petersburg and Moscow are capitals) is an unfavorable citus for a 'cure.' The contrast of a medical establishment with the surrounding associations is fatal to it. All such establishments have a melancholy and depressing look about them. Phthisis, catarrh and tubercles seem written on every brick, and labelled on every bottle. I felt that I should have an attack of 'nerves' if I stayed there ten minutes, and that all the Tartar mares in Russia could not restore me. If you are unlucky enough to require a 'cure,' go bury yourself alive as far from the habitations of men as you can; flee from the very neighborhood of a city, far more a capital. Consider that situation the best which offers you the fewest resources, otherwise your labor is likely to be in vain, and your 'cure' a mockery and a delusion. All these advantages, I may mention, are pre-eminently secured at Samara.

"Besides these establishments at St. Petersburg and Moscow, Dr. Stahlberg, formerly at the head of the Moscow establishment, has set up a similar one at Wiesbaden, maintaining that the covil is all humbug, and that it is 'the breed that does it.' The sceptical analysis is carried still farther; for in London there is a Russian (Polish) medical man, Dr. Yagielski, an authority in koumis, who goes so far counter to the received notions on the subject as to deny not only the indispensableness of Tartar mares for the production of koumis, but even of mares at all, actually giving the preference (tell it not in Gath and whisper it not in Samara) to the domestic cow. But I must leave the cow-produced koumis to its fate, and proceed with my description of the genuine covil-fed Tartar-bred mare's milk, koumis. The process of manufacture is the following. I may mention that it is Bashkir girls who are generally employed to make it. It is their national beverage, and they best understand it. Being less wild, too, than the nomad Khirgis, it is easier to 'catch' this particular Tartar specimen.

"Koumis is fermented mare's milk. An element of fermentation is consequently required for its manufacture. This is supplied by

koumis itself. A certain proportion (one-third) of koumis is poured together with (two-thirds of) fresh mare's milk into a clean wooden vessel resembling an ordinary English churn, and there left for from six to eighteen hours, according to the degree of (alcoholic) strength that is required. During this period it is from time to time subjected to a churning process, with the object of keeping up and stimulating the process of fermentation. Herein consists the chief art, and whatever secret there may be in koumis-making is to know the exact amount of churning required; for, although a certain amount is requisite, it must be suspended at the point where curds or butter would be formed. Habit and practice alone teach this to the koumis-maker. After this fermenting process, stimulated by the occasional churning, has lasted a certain time, say six hours, a portion of the contents of the churn is drawn off, and this constitutes the weakest kind of koumis, say koumis of the first degree of strength. The remainder in the churn is subjected to a further period of similar fermentation and churning, say for another six hours, and then the churn is again tapped, and koumis of the second degree of strength is the result. Then another period of say six hours of a similar process for what still remains in the churn, and this, when drawn off, constitutes koumis of the third degree of strength. It will be observed that the difference in the degree of strength of the koumis consists in the different amount of fermentation to which it has been subjected. The strength of the koumis ought to be graduated according to the requirements of different patients, and this is a matter of some importance in the case of invalids. As soon as the koumis is drawn off it is poured into ordinary quart bottles, made with extra strong necks, corked down and tightly strung; for, containing as it does large quantities of carbonic acid gas, it is subjected to the explosive accidents of all such liquors. Indeed, the inexperienced koumis-drinker, on opening a bottle of koumis for the first time, if he is lucky enough not to lose his eye by the explosion of the cork, will most undoubtedly be soused all over by the frothing liquid.

"I have mentioned that the koumis itself is the fermenting element used in the composition of koumis—one-third koumis for two-thirds fresh mare's milk. It may be asked, when koumis is not obtainable (as at the beginning of the koumis season), what substitute is used? A couple of tablespoonfuls of yeast are put into an ordinary-sized quart bottle, filled with mare's milk which is allowed to ferment for

twenty-four hours. The contents of this bottle are then poured into double the quantity of frese mare's milk, and allowed to ferment for twenty-four hours more. Then twice the amount of fresh mare's milk is again added, the whole fermenting for twenty-four hours more. Thus a sufficient amount of the fermenting element is obtained to begin operations, the proportion 1:3 being always maintained between the fermenting element and the fresh milk. Some patients drink as much as six or eight bŏttles of koumis a day. Some subsist entirely on it; but, generally speaking, people eat their ordinary meals, and drink koumis between. It has a sharp and bitter taste, caused by the lactic acid, which it contains in large quantities; and the strongest sorts of all leave a kind of soft, buttery after-taste, which, however, the carbonic acid gas helps to dissipate. Some people never can get over their dislike to the taste of koumis, and those it is never likely to benefit. The complaints for which koumis is considered beneficial are consumption, and, it may be said generally, all affections of the mucous membrane. It is, of course, a mistake to suppose koumis a specific for consumption. It is nothing of the kind. People sometimes go to Samara in the last stages of that disease, when neither koumis nor anything else can be of avail. But in the early stages of consumption it often effects, by its strengthening properties, a beneficial change in the organism of the patient, and helps to arrest the ravages of the complaint. Where, however, it is of sovereign efficacy is in cases of recovery from a long and wasting illness where no organic detriment exists. Often, in such cases, after a couple of months of koumis-drinking the system is braced up, the blood streams more quickly through the veins, the pulsation increases, and a general feeling of *bien-être* pervades the whole man. Not that I feel inclined to attribute the whole benefit which is derived from a cure at Samara to the properties of koumis. The fine, dry, rarefied air of the steppes has undoubtedly something to do with it. The lungs are called into active play, and lend their assistance to the general recuperative process.

"You *feel* the dryness of the air at Samara. In the higher parts of the steppes there is no dew. The most delicate and consumptive patient can admire, with impunity, the beauties of the setting sun—and the sunsets are very beautiful at Samara. He is not obliged, as in Italy, to flee that treacherous hour: he can sit out of doors without risk, and watch that setting sun reflected on the Jigoulee hills

which here skirt the Volga, fringing with gold the clouds that crown the summits of those glowing hills, and lighting up the whole expanse of the river with liquid glittering fire. There is no fixed duration for a 'cure' at Samara. The average stay of patients is two months, but as koumis is rather a diet than a medicine, their stay is often prolonged beyond this period. The weather is the chief regulator in this respect. Fine hot weather is considered essential for a 'cure.' June, July and August are the finest months. The koumis establishments, of which there are three principal and several smaller ones at Samara, are situated at distances varying from six to twelve versts (four to eight miles) from the town, and are composed not of single blocks of buildings, but of little detached houses, mostly built of wood, containing from two to six, and rarely as many as eight rooms each, the whole connected with, that is, surrounding, a larger building, which is the kursaal of the little colony, or, where a kursaal does not exist, a central kitchen, which ministers to the culinary requirements of the whole. When there is a kursaal, the patients can either dine there at a *table d'hôte*, or separately in their own apartments.

"I have used the term 'colony' to describe these koumis establishments. It best depicts the effect which they produce on one at first sight. There, in the midst of the desert steppe, with few signs of human habitation around, you suddenly come upon a little wooden oasis, surrounded by a paling, and dotted about with a number of little single-storied wooden houses, resembling overgrown mushrooms, with zigzag walks or terraces cut in every direction, and queer-looking people, men and women, walking about—all drinkers at all watering-places are peripatetics—with a quart bottle in one hand and a large mug in the other, and you know that you are at a koumis establishment."—*Pharm. Journ. and Trans., October* 24, 1874.

AERATED WATER CONTAINING TRIBASIC PHOSPHATE OF LIME.*

By M. Chevrier.

Various considerations led the author to consider the tribasic phosphate of lime to be the best suited for administration where the use of phosphate is indicated. He therefore sought a solvent in which it could be administered without altering its composition. This he

*Abstracted from the *Répertoire de Pharmacie*, vol. ii, p. 455.

thinks he has found in carbonic acid. In fact, he has ascertained by experiment that the bone phosphate dissolves in carbonic acid, and that its solubility augments with the pressure. In order to effect the solution easily and rapidly, it is necessary to use the phosphate in the gelatinous form. On the other hand, however, as aërated waters strongly charged with carbonic acid have a special medicinal action, and might in certain cases be contra-indicated or badly supported by the patients, the author proposes not to exceed the proportion of gas which will dissolve in water under the ordinary pressure of the atmosphere. Under these conditions, a glass of gaseous water will dissolve and retain twenty-five centigrams of tribasic phosphate of lime, which would appear to be sufficient for a single dose that might be repeated several times a day.

The apparatus necessary for producing this gaseous phosphated water is very simple. Carbonic acid gas, produced in the usual way and well washed, is allowed to bubble into a milk of gelatinous phosphate of lime contained in a reservoir. After the passage of the gas for some hours the current is stopped, the excess of phosphate of lime is allowed to deposit, and the clear solution is decanted into bottles similar to those used for natural mineral waters.

The water so obtained is limpid, colorless, and inodorous, and has a subacid flavor. Exposed during several hours to the air, it loses a portion of its carbonic acid, and a pellicle forms on its surface. At a later period it becoms turbid. It is, therefore, important to keep bottles that are in use corked, and not to pour out the water long before drinking it.

The presence of basic phosphate of lime in this water may be easily recognized by the following reactions:—

(1.) The phosphated gaseous water is alkaline, a characteristic in which the author considers it differs from all the solutions and syrups hitherto recommended, they having a strong acid reaction.

(2.) Boiling, by driving off the gas, causes the precipitation of the basic phosphate.

(3.) Nitrate of silver gives a yellow precipitate of phosphate of silver.

(4.) Ammonia precipitates basic phosphate of lime.

(5.) Ammoniacal sulphate of magnesia causes a precipitate of ammonio-magnesian phosphate.

(6.) Both acetate of urania and molybdate of ammonia give the yellow precipitates characteristic of the phosphates.

The author states that he is convinced that the water, of which the preparation and properties are described above, really contains the tribasic phosphate without any mixture of other lime salts, and might be substituted advantageously for the syrups and solutions already in use. It mixes without decomposition with wine, beer and milk, and consequently can be administered with food—a condition eminently favorable for assimilation.—*Pharm. Journ. and Trans., Sept. 19th,* 1874.

NOTE ON JAPANESE OIL OF PEPPERMINT.

By John Moss, F. C. S.,
Late Demonstrator in the Laboratory of the Pharmaceutical Society.

At the last meeting of the Society, the opening meeting of the session, there was placed on the table a specimen of so-called crystallized oil of peppermint, this having been presented to the museum by Messrs. Cyriax & Farries. The specimen excited considerable interest, and did not seem to have been previously met with by those who examined it. I therefore thought it might be useful to ascertain what was known of the body, and, if it presented any points of interest, to place these before the Society. I may premise that the particular sample in question is part of a parcel which was received from Japan, in a cylindrical tin canister, along with a bottle of the liquid oil, a specimen of which is presented to the museum by Messrs. Corbyn & Co.

It appears that in 1862 a memoir on crystallized oil of peppermint, from Japan, was presented to the Chemical Society by Oppenheim.* This chemist speaks of the substance coming to this country in considerable quantity in earthenware jars, and of its being adulterated with sulphate of magnesium—to which it has a close resemblance in crystalline form—to the extent of 10 to 20 per cent. This is far from being the case now, for the result of many inquiries is to find that the body is almost unknown here (indeed, Mr. Hanbury is the only gentleman to whom I have applied who is at all acquainted with it;† and, so far from being adulterated with sulphate of magnesium, the specimen on the table, if not absolutely pure, is at least free from all impurities not derived from the original oil.

* Journ. Chem. Soc., xv, 24.

† Dr. Flückiger (Pharm. Journ. [3], ii, p. 321) speaks of solid *Japanese peppermint oil* having been met with in European trade during the past few years.

Oppenheim called the subject of his experiments, *camphor or stearopten of peppermint oil*, and also *menthol*. In Dr. Attfield's "Manual," peppermint camphor is styled, more systematically, I think, hydrous menthene, *menthene* ($C_{10}H_{18}$) being the hydrocarbon which is known to be common to several, if not all, varieties of peppermint oil. Oppenheim found that his camphor fused at 36° C., and boiled at 210° C.; that it was very slightly soluble in water, very soluble in alcohol, ether, bisulphide of carbon, fatty and essential oils, and in alcoholic solutions of the caustic alkalies—from the soda solution it crystallized in long needles. It was insoluble in aqueous alkalies. It liquefied in a current of hydrochloric acid or of sulphurous acid gas, resuming the solid crystalline character unchanged on exposure. From solution in strong acids it was separated by water as an oil, which soon solidified with properties unchanged. Having repeated these experiments, I have no hesitation in saying that the present specimen, if not the identical body examined by Oppenheim, is a physical isomer of it; for I find that it fuses at 39° C., re-solidifies at 37·5 C., and boils at 215° C. It should be stated, however, that the boiling point remained stationary for some seconds at 210° C., so that there is the probability of this specimen being a mixture of Oppenheim's camphor, with a more condensed body having higher fusing and boiling points. There may be a number of such isomers, for Dumas,* by exposing at 0° C. American oil of peppermint, which resembles the Japan oil in furnishing crystals at a relatively high temperature, obtained crystals which, when purified, fused at 25° C., and boiled at 208° C. In other characters they resemble the crystals from Japan oil. By exposing the liquid Japan oil to cold for some days (a great part of the time below 0° C.) I failed to obtain crystals. It is therefore probable that this oil has already yielded such as it is readily capable of doing. This is indeed what one might expect, for it is not easy to see the object of sending both crystals and liquid into the market, if the original product does not spontaneously deposit the former, and so give an inconvenient mixture of solid and liquid. Both Oppenheim and Dumas concur in ascribing the formula $C_{10}H_{20}O$ to the bodies they examined. Time, or the want of it, has not permitted me to verify this. The menthol from spearmint described by Gladstone† has the formula $C_{10}H_{14}O$. It boils at 225° C. Oppenheim considers, on very good grounds, that the body

* Gerhardt, "Traité de Chémie Organique," iv, 357.

† Journ. Chem. Soc., 24, 10.

from Japan oil is a monatomic alcohol, $\left.\begin{matrix}C_{10}H_{19}\\H\end{matrix}\right\}O$ *menthylic alcohol* or *hydrate of menthyl.*

In an experiment with liquid Japan oil it commenced boiling at 206° C., the temperature rose to 210° C., where it was stationary for some time, and finally reached to 218° C. This, therefore, is a mixture of two or more bodies; but as menthene, according to Oppenheim, boils at 163° C., this hydrocarbon does not enter into the mixture.

Crystallized *Chinese Oil of Peppermint* is mentioned in the work "Pharmacographia,"* recently issued by Mr. Hanbury in conjunction with Dr. Flückiger. It is there referred with reserve to *M. arvensis.* Oppenheim distinctly gives *M. piperita* as the source of camphor he examined, and he does not hint at a Chinese origin. It is stated in "Pharmacographia,"† that to distil *M. arvensis* with *M. piperita* ruins the flavor of the oil yielded by the latter plant. I consider this strong positive evidence that *M. arvensis* is not the source of Japan oil, for this oil is not greatly inferior to the best Mitcham oil in point of fragrance. If a demand for it were to arise in this country (by confectioners, etc.), there is little doubt that it could be supplied at a low price.‡—*Pharm. Journ. and Trans., Nov.* 7, 1874.

CURIOUS CONVERSION OF ALCOHOL INTO ACETATE OF ETHYL BY THE AGENCY OF CRYPTOGAMIC LIFE.

By F. M. Rimmington.

To those acquainted in any degree with the remarkable power of metamorphosis possessed by some of the microscopic cryptogami, this paper will be of interest. It may probably have been noticed by others that concentrated infusion of quassia is very prone to become beid, but the conversion of alcohol into acetic ether has probably not aeen before noticed. I assume, both from my own observation and the published experiments of Pouchet and Pasteur, that this transformation has been brought about by the agency of cryptogamic life in the fluid, whether that life was fungoid or otherwise.

My attention was recently drawn to a bottle of concentrated infusion of quassia that I had made myself some months ago, which smelt so strongly of acetate of ethyl that it was rather difficult to resist the belief that some had not been introduced. The fluid was quite clear and bright, without any sign of fermentation or other change going on. On pouring off the clear liquor, a very thin stratum of sediment appeared at the bottom of the bottle, looking very like mud.

The circumstance aroused in my mind an interest to know the explanation of this phenomenon, and the inquiry took the following

* p. 434. † p. 436.

‡ The crystallized oil of peppermint and of thyme were exhibited by Messrs. Sachse & Co., of Leipzig, at the meeting of the American Pharmaceutical Association, held in St. Louis, 1874.

shape: Lignum quassiæ has often a fusty smell and a corresponding taste; this I attributed to the presence of some form of fungus growth —and most probably the fungus is a penicillium—and, assuming this to be so, the probability is that some of the spores have got into the fluid, and have been slowly and silently effecting the conversion of the alcohol into acetate of ethyl. It is this fact which constitutes the point of interest, for if the alcohol had only become changed into acetic acid, the presence of fungi or anything else would not have been necessary, but the change is of a more complex and delicate character. The amount of acetic acid present is only small, and much diluted, but the odor of the ether is powerful. The next point was to prove the theory I had set up, and I proceeded to examine the sediment microscopically. With a one-fifth objective it looked like granular amorphous matter, mere points, without structure. But sufficient was shown to determine that it was not inert matter, and, on submitting it to the amplifying power of 800 or 900, its nature was clearly and beautifully displayed; it was made up entirely of unicellular organisms, of a somewhat irregular roundish form, about one-third the size of a yeast cell, and having, like that, one or more nuclei. Besides these cells, were a considerable number of bacteria, or vibrios.

To mycologists there is another point of interest I will mention; these exceedingly minute bodies, when viewed by reflected light, look opaque, and of a *drab or grey color*, and are not globular, but flattened on two sides. These flattened sides have raised edges and slightly raised centres, something like the top of a pork pie.

August, 1874.

—*Pharm. Journ. and Trans.* [*Lond.*], *Sept.* 12, 1874.

Varieties.

Determination of the Freezing-Point for Delicate Thermometers—Dr. G. Krebs.—Schultz, in his treatise on the freezing-point of the water of gaseous solutions and the regelation of ice, shows that the freezing point of water is lowered by dissolving gases, the change being nearly proportional to the amount of gas dissolved. That water holding solids in solution freezes at a lower point is well known. Thomson and Clausius have shown from the principles of the mechanical theory of heat that the freezing-point of water falls 0·007° C. for every additional atmosphere of pressure. To determine the true freezing point, take a glass tube closed at one end, 20 centimetres long, and 2 wide, fill it almost full with sulphuric acid, and heat. Then pour out the acid, and rinse repeatedly with pure distilled water. The tube is then two-thirds filled with distilled water, which has been boiled for some time in a clean beaker, and a small quantity of filtered oil of turpentine (about one centimetre in depth) is poured upon the water. The tube is then carefully heated

in the oil-bath, without allowing the temperature to rise to the boiling-point lest an explosion should ensue. The object of the heating is to remove any air bubbles which may adhere to the side of the glass, or may remain between the turpentine and the water. When the water has been thus exposed for a considerable time to a temperature very near to the boiling-point, the tube is taken out of the oil-bath, cooled in cold water, and then placed in a freezing mixture (water and nitrate of ammonia). After a few minutes the water is cold, and in most cases a portion of it freezes at once if a thermometer is inserted, and moved up and down. If this does not take place, the tube must be returned to the freezing mixture, and cooled more strongly. The thermometer may be previously placed in an empty test-tube, which is then plunged in the freezing mixture. It is very important that the thermometer should be cooled down close to the freezing-point before being introduced into the water. The best thermometers when tested in this manner show a freezing-point too high by about 0·1° C.—*Repertorium für Experimental Physik*, Band x, *from Chem. News*, *October* 16, 1874.

Impermeable Paper.—By plunging a sheet of paper into an ammoniacla solution of copper for an instant, then passing it between the cylinders and drying it, it is rendered entirely impermeable to water, and may even be boiled without disintegrating. Two, three, or any number of sheets thus rolled together become permanently adherent, and form a material having the strength of wood. By the interposition of cloth or of any kind of fibre between the layers, the strength is vastly increased.—*Journ. Frank. Inst.*, *Aug.*, 1874.

Cod-Liver Oil.—In a recent letter describing the fisheries about Newfoundland, it is estimated that the total catch of cod along the coast is not less than 1,650,000 quintals, and the quantity of oil extracted from their livers one and a quarter million gallons, valued at about £200,000. Nearly all of this oil, it is added, is shipped to England, the duty in the United States being so high at present as to almost prohibit its importation, otherwise much more of it, if not all, would go to that market.—*Lond. Pharm. Jour.*, *Nov.* 7., *p.* 368.

Pharmacies in Paris.—The *Lancet* states that, according to the census recently published by the Prefecture of the Seine, there are in the city of Paris 618 pharmaceutical establishments, and 298 in the suburbs.—*Ibid.*

Minutes of the Pharmaceutical Meeting.

The second meeting of the session was held November 17th, 1874, Prof. Remington in the chair. Number in attendance, thirty-one. The minutes of the previous meeting were read and approved.

Prof. Maisch presented, for the cabinet, from W. F. Simes & Co., an empty tub, with its original covering, in which Japanese tub-camphor is imported.

Mr. Simes exhibited compressed camphor at the Franklin Institute Exhibition. It is prepared from Japanese crude camphor, the color of which is grey to pinkish-white, layers of various degrees of purity being often found in the same tub. It contains some water and volatile oil, but is not as impure as

Chinese camphor. To convert it into compressed camphor it is placed in a still and a moderate heat applied. The condenser is a large chamber, having projections so arranged as to lengthen the course of the vaporized camphor In the first partition the product is mostly in the pulverulent form; in the last it crystallizes in beautiful snow-flake-like crystals. It yet contains the water. and volatile oil on account of which the ordinary refined camphor is preferable for medical purposes. The crystalline powder is then placed in iron moulds, which are moistened with water to prevent the camphor from adhering, and by hydraulic pressure pressed into rectangular blocks of various weights. The iron rust of the moulds somewhat colors the exterior of this camphor, which is used to prevent the ravages of moths, and the object of this form is to prevent too rapid evaporation. Specimens illustrating the various stages of this process were exhibited by Professor Maisch.

Very handsome refined camphor is now produced in this city by Messrs. Kurlbaum & Co., also in New York. Refined camphor was formerly imported from Europe, where it is sublimed in glass spheres, which are broken to obtain the camphor. In this country the subliming vessels are of such a form as will allow of their being taken apart. The volatile oil contained in the crude camphor is also collected. Years ago camphor was refined in this city by the Messrs. Wetherill, also by John Farr. The changes in this industry have been owing to the tariff.

Prof. Remington remarked that the sublimed camphor, if free from moisture and volatile oil, might be used as powdered camphor, it being essentially the product recommended by John C. Lowd in the Proceedings of the American Pharmaceutical Association, 1871, page 441.

A. W. Miller, M. D., presented Feé-jee nux vomica, so called, and desired some information in regard to it.

Prof. Maisch stated they were the seeds of *Strychnos potatorum*, which were exhibited to the College in May, 1871. For accounts of them, see *Amer. Journ. Pharm.*, 1871, pp. 241, 281, 412 and 525.

Dr. Miller also showed oil of sassafras containing 14 per cent. of resin, which is left upon evaporation, and was probably added as oleo-resin.

R. V. Mattison presented pseudomorphic crystals of bicarbonate of sodium from the Pennsylvania Salt Company. The commercial article of this company is bolted and of very good quality, containing less carbonate than any other brand. It contains occasionally, but rarely, traces of alumina, and is to be preferred over the best imported brands. See *Amer. Journ Pharm.*, 1872, p. 41.

Dr. Miller, on behalf of Prof. Dr. Robert E. Rogers, extended an invitation to the faculty, members and students of this College to visit the new halls and cabinets of the Medical Department of the University of Pennsylvania, Thirty-sixth and Woodland avenue, also a special invitation to his lectures on chemistry, which are held on Tuesday, Thursday and Friday, from 11 to 12 o'clock. Upon motion, the Registrar was directed to convey to Prof. Dr. Rogers our warmest thanks for his kind invitation.

Prof. Maisch exhibited American asbestos in its natural state as found in this country, also the same purified, both being in very long fibres. The puri-

fying process, which is patented, is based upon the use of acid, and afterwards forcing steam through the fibres, which are thus cleaned and preserved unbroken. It is intended to be used for filters, and fire-proof articles of small size.

Prof. Remington had seen it applied in the manufacture of a small spirit stove. This stove heats quickly, and is convenient for travellers.

R. V. Mattison said it was used for making fire-proof paper by a company in this city, but as yet this paper was not in the market.

Prof. Remington exhibited and described a percolator stand made by D. Benjamin, Esq., Camden, N. J. It is not patented, and the inventor offers it as an effort to assist the apothecary who desires to prepare his galenical preparations. It is difficult to explain the many advantages of this stand, but practical use in the laboratory will show its conveniences. It will hold any size of percolator from half a pint to sixteen gallons with perfect ease and firmness, by means of the adjustable clamps at the top. Several percolators and funnels can be used on it at the same time by means of the moveable folding shelves. There are two of these, which may be elevated or depressed, and held in perfect safety, and each has three folding parts; they can be adjusted to the height of any counter or stove, for holding condensers, receivers, funnels and dishes. It is constructed of wood, occupies but little space either when in use or not, is neat, ornamental and affords great protection to the apparatus in use; is not liable to wear or get out of order. In ordinary percolations or filtrations it covers the various sized instruments, excluding dust and preventing evaporation; especially convenient for self-feeding percolators. It is a very good press for small operations, the mass being enclosed in a bag, then screwed up in the clamps and allowed to drain.

On motion, the meeting adjourned.

WILLIAM MCINTYRE, *Registrar.*

Pharmaceutical Colleges and Associations.

ST. LOUIS COLLEGE OF PHARMACY.—At the annual meeting held October 28th, the following officers were elected for the ensuing year: Chas. Habicht, President; J. M. Good, Vice-President; Chas. L. Lips, Treasurer; E. P. Walsh, Secretary, and C. K. Jones, Charles Bang, W. H. Crawford, F. X. Crawley and William R. Grant, Trustees.

The Faculty continues as last year, with Theodore Fay, M. D., Professor of Chemistry and Dean of the Faculty; Otto A. Wall, M. D., Professor of Materia Medica, and Hubert Primm, Ph. D., Professor of Pharmacy. The College has opened its winter session with a class of sixty-eight students, being an increase of twenty-six over last year. The following gentlemen constitute the Board of Pharmacy: Theodore Kalb, President; J. M. Good, Secretary; Charles Habicht, F. X. Crawley, M. W. Alexander.

The Board held semi-weekly meetings for the purpose of examination and registration of pharmacists, commencing Tuesday, August 4th, and ending Tuesday, October 2d, 1874. The whole number registered (being those who

by the law, were exempt from examination) was 174. The whole number examined was 72; of the latter, 16 failed to pass.

California College of Pharmacy.—At the Second Annual Meeting, held November 4th, the following officers were elected: Wm. T. Wenzell, President; Wm. Geary, Treasurer; Emlen Painter, Secretary; John Calvert, Wm. M. Searby and G. G. Burnett, Trustees.

The second course of lectures, with twenty-four matriculants, commenced June 16th, and will close December 18th. The faculty consists of Wm. M. Searby, Professor of Materia Medica; J. Calvert, Professor of Pharmacy; W. T. Wenzell, Professor of Chemistry, and H. Behr, Professor of Botany It is the intention to commence the third course of lectures in March next.

The Richmond Pharmaceutical Association held their first annual meeting on Monday night, November 9th.

The President (Mr. Blair) delivered his annual address, which was an interesting document, calculated to stimulate the members of the Association to greater energy in their efforts to carry forward the important aims of the Society.

The Secretary and Treasurer each presented their respective reports, which showed that the Association, although it had just completed the first year of its existence, is in a flourishing condition.

The following officers were elected for the ensuing year: President, Hugh Blair; First Vice-President, Robert W. Powers; Second Vice President, Jesse Child; Recording Secretary, Joseph Anthony; Corresponding Secretary, T. Roberts Baker; Treasurer, George L. Cary; Executive Committee: William P. Poythress (chairman), Polk Miller and W. A. S. Conrad.

Washington Pharmaceutical Association.—At the annual meeting, held November 4th, the following officers were elected for the ensuing year: President, William T. Baldus; Vice-President, Jno. T. Cole; Recording Secretary, Charles S. Price; Corresponding Secretary, John Z. Gibbs; Treasurer, Chas. H. Warren; Register, R. H. M. Harrison.

Pharmaceutical Society of Great Britain.—At the Pharmaceutical Meeting held November 4th, Mr. T. H. Hills presiding, numerous donations of books and drugs were made. Mr. Thomas Greenish then read a paper on the chemical nomenclature of an International Pharmacopœia, in which it is stated that the opinions expressed at the Pharmaceutical Congress recently held at St. Petersburg, were in favor of the Latin language, the metrical system of weights and measures, the greatest simplicity in galenical preparations, the requirement of a fixed minimum percentage of active principles in narcotic and drastic drugs, and the fixing of the maximum of impurity allowable where absolute purity is not essential. For the chemical nomenclature the system of Berzelius had been recommended by some delegates; but this appears to have met with little favor, Professor Dragendorff, for instance, expressing

himself as agreeing in principle with the names as suggested by Prof. Attfield, and adopted in the U. S. Pharmacopœia.

Professor Attfield read a paper on the same subject, in which the chemical nomenclature of the modern pharmacopœias is briefly reviewed, and the adoption advocated of a nomenclature reflecting modern unitary ideas, and not the old binary or dualistic hypotheses; he likewise expresses himself in favor of the basylous constituent of the salt being placed first in the name. Speaking of the different systems in the chemical nomenclature of pharmacopœias, the following names are given as synonyms, all based upon the unitary system: Nitras potassicus, Nitras potassii, Nitras kalicus, Nitras kalii, Potassium nitricum, Kalium nitricum, Kalii nitras and Potassii nitras. For an International Pharmacopœia the author advocates for the heading the adoption of two systems of chemical names, to be placed alongside of each other as being of equal value, namely, the system adopted in the United States, and that of the Austrian (which to some extent is also that of the German) Pharmacopœia; thus, Ammonii chloridum *vel* Ammonium chloratum; Potassii acetas *vel* Kalium aceticum; Quiniæ sulphas *vel* Chinium sulphuricum, etc. A general alteration in the whole nomenclature is not believed to be acceptable to the general bodies of medical practitioners and pharmacists.

In the interesting discussion which followed, Professor Redwood expressed very similar views; Mr. Groves was in favor of the nomenclature of the German, Mr. Ince preferred that of the United States Pharmacopœia; Mr. Martindale spoke against the Berzelian nomenclature as headings, though he favored it as synonyms. Mr. Bland considered the discussion premature; but Mr. Sutton stated that the whole question of an International Pharmacopœia was open for discussion and would remain so for a long time, the Pharmaceutical Congress probably not meeting for four or five years.

Mr. Arthur W. Postans read a paper entitled "Suggestive Notes on the Pharmacy of Amorphous Phosphorus," in which this substance is recommended as preferable, at least from a pharmaceutical standpoint, to the administration of ordinary phosphorus in the usual way. During the discussion Prof. Redwood stated that an emulsion of phosphorated oil, made with yolk of egg, syrup and chloroform water, to which afterwards a little liquor potassæ is added, will keep for several months, and is a very elegant preparation. The phosphorus pill mass of the British Pharmacopœia, made by liquefying under hot water and mixing two grains of phosphorus with 120 grains of tolu balsam, and then incorporating 60 grains of yellow wax, will keep well under water, and if made into pills with some powdered soap, will afterwards readily disintegrate in water and consequently dissolve in the stomach.

Mr. Martindale prefers for a phosphorus pill a mass recommended by him in 1870, and which is made by dissolving phosphorus in cacao butter; this, by a skilful dispenser, may be easily rolled out into pills, which may be varnished, when they will keep unaltered, but still dissolve readily at a low melting point.

Pharmaceutical Society of Paris.—M. Regnauld presided at the meeting held October 7th. Amongst the contributions to the cabinet was a sample of

the leaves of *Jacaranda brasiliana*, Pers., which are used in Brazil, for their stimulant properties, under the name of Caroba.

M. Poggiale presented a paper by M. Gault, of Nancy, on the preparation of monobromated* camphor. The author's process† differs from that published in this Journal, 1872, p. 342, in the following particulars: A retort is used having ten times the capacity of the camphor bromide formed; powdered camphor is introduced, and then bromine in a thin stream until the camphor is all liquefied, weighing being considered unnecessary, since an excess of either material will not affect the final result; heat is applied by a water-bath, when a tumultuous extrication of gas takes place, consisting of hydrobromic acid and bromine. Raising the temperature to 132° C. is regarded as increasing the oily product. When the disengagement of gas ceases, the contents of the retort are thrown into water and boiled for some time in the open air to remove the remaining hydrobromic acid and bromine, the loss of monobromated camphor by volatilization being considered as insignificant when compared with the advantages of the first step of purification. The mass is now purified by repeated crystallization from stronger alcohol. Its melting point was found by Gault at 69° to 70° C., its congealing point lower. The oily product contained in the mother liquor, and adhering to the last crystallizations, is then heated to between 200° and 220° C., until a black viscous mass is formed, which is purified by crystallization from alcohol; by not raising the temperature to 260° C., the author believes to avoid the carbonization of a notable portion of the product.

M. Poggiale also presented a memoir on the action of solar light upon iodide of potassium, containing observations made by M. Vidau, a military pharmacist (pharmacien-major), stationed in Africa. The interesting results which are published in detail (*Journ. de Pharm. et de Chim.*, 1874, November, p. 349–354), may be summed up as follows: Solution of iodide of potassium and contained in paper (such as is usually used for ascertaining the presence of ozone in the air) is rapidly decomposed under the influence of sunlight, and under the most divers conditions, which, for paper saturated with starch and the iodide, was already pointed out by Cloez. Concentrated solutions appear to be more rapidly affected, becoming strongly alkaline as the decomposition proceeds, likewise solutions which have been previously acidulated. In determining ozone by starch and potassium iodide paper, or by the alkaline reaction produced, the influence of sunlight and its intensity cause serious errors, and the reactions obtained must be referred to both, and not merely to one of the causes indicated.

During the discussion which followed, M. Latour stated that iodide containing one per cent. carbonate of potassium acquires spontaneously a yellow color, three per cent. of the alkaline salt being required to keep the former unaltered.

* It is to be regretted that most medical journals in this country and elsewhere persist in erroneously calling this compound *monobromide of camphor*, which has the composition $C_{10}H_{16}OBr$. A few pharmaceutical journals use, likewise, this incorrect name, and M. Gault has called it *monobromure de camphre*, which was very properly corrected by M. Bourgoin to *camphre monobrome*. Its proper English name is *monobromated camphor*, it being a substitution compound of the formula $C_{10}H_{15}BrO$ (new notation).

† Published in *L'Union Pharmaceutique*, 1874, September, 266–269.

M. Bourgoin presented a note on two isomeric bodies, perbromide of acetylen and hydride of tetrabromated acetylen, the former of which is liquid, the latter solid.

Dr. C. Roucher, military pharmacist, read a note upon a new reaction of commercial oil of crisped mint (*Jour. de Pharm. et de Chim.*, November, 354). When about 20 per cent., by weight, of acetic acid, of 10° B. (sp. gr. 1·074), are added to one per cent. oil of mint, and the mixture is agitated, after a half to one hour a slight blue coloration is obtained, which gradually increases in intensity. With the darkening of the color, a very marked dichroism becomes perceptible, the color being blue in transmitted light and a fine vermillion red in reflected light, similar to that shown by some anilin compounds dissolved in alcohol. In the light, the color gradually changes to green and yellow. The liquid is instantly decolorized by potassa, but water produces a very light blue precipitate, which upon the filter becomes rapidly red, and finally decolorized. Neither menthol, oil of turpentine, camphor or oil of lemon produce a similar result.

M. Méhu read a note by M. Patrouillard on a false white ginger (see page 562). It may be remarked here, that this whitewashed ginger is extensively used in the United States.

M. Méhu made some remarks on the International Pharmaceutical Congress, and presented a specimen of *Artemisia cina*, the plant yielding the so-called Levant wormseed (Santonica, U. S. P.).

The German Apothecaries' Association held its Third Annual Meeting at Munich, September 10th and 11th. President, Dr. Schacht; Secretaries, Messrs. H. Mueller and Mack. The president read his annual report, showing the membership to be 2,715, and giving an account of the activity of the directory during the past year. The discussions were mainly confined to internal affairs of the society, to the condition, particularly the supervision of pharmacy in Germany, educational requirements, &c.

Prof. Buchner delivered a lecture on volatile oils, showing that the volatile oil of *Spiræa ulmaria* must be produced in the flower-buds by the oxydation of a salicyl compound, and that volatile oils may be generated by chemical decomposition.

Prof. Reichardt spoke on the fermentation of milk, and on gum agar-agar; also on the scientific representation of pharmacy at the German universities. Dr. Wolfrum, on the examination and preservation of medicinal substances, and Dr. Wilms, on the commercial so-called pomegranate root-bark, and the recognition of the trunk and branch-bark by means of the adhering apothecia of lichens, of which the author had recognized twelve species.

The Fourth Annual Meeting will be held at Hamburg.

The General Austrian Apothecaries' Association held its Thirteenth Annual Meeting at Vienna, September 20th to 22d, director Schiffner presiding, who read a very elaborate report on the activity of the society during the past year. Dr. von Waldheim gave a detailed account of the transactions of

the International Pharmaceutical Congress at St. Petersburg, after which the new constitution of the Association was discussed. The next annual meeting will again be held at Vienna.

Editorial Department.

To our Readers.—The appearance of the November number of our Journal was unavoidably delayed through the engraver, who, owing to an affection of the eye, was unable to finish, in due season, the portrait of the late Prof. Proctor, which was to accompany the memoir of him, who, for a period of twenty-three years, had been known to the readers of this Journal as its sole or assistant editor. This portrait has reached the hands of our readers; and, while some who knew the deceased only during the last few years of his life may perhaps find it difficult to reconcile the picture with his appearance as *they* knew him, there are many others who have known him only as they find his features delineated in the picture. With few exceptions, those students of the Philadelphia College of Pharmacy, whose good fortune it has been to listen to his instructions, have known him only without the beard, during the period in which nearly all his scientific labors have been performed, and all who met him before 1867, will find the likeness not only faithfully, but artistically executed.

To meet the wishes of many, the Publication Committee have determined to print the portrait of the late Professor Procter upon large and heavy paper, suitable for framing; and those of his former pupils and friends, who are desirous of thus preserving his features, may obtain copies, at fifty cents each, by addressing, Mr. H. H. Wolle, the Business Editor of this Journal.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Pharmacographia. A history of the principal drugs of vegetable origin met with in Great Britain and British India. By Friedrich A. Flückiger, Phil. Dr., Professor in the University of Strassburg, and Daniel Hanbury, F.R.S., Fellow of the Linnæan and Chemical Societies of London. London: Macmillan & Co., 1874. 8vo, pp. 704.

A work of this kind has long been needed in the English language; that it has been written by the authors, is sufficient proof of its excellence.

The drugs are classified according to their botanical origin, and the natural orders arranged in accordance with the system of De Candolle. The Latin name, with the principal synonyms of each drug, is followed by their English, French and German names.

The section *Botanical Origin* enumerates the recognized botanical name, together with the synonyms, the habit and habitat of the plant yielding the drug; but botanical descriptions are, very properly, almost entirely excluded.

The section *History* is particularly interesting. It gives a historical account

of each drug from the time when it was first used, traces its employment by different nations, its influence upon commerce, its value at different periods, cultivation, name, &c.

This is followed by an account of the *Collection* of the drug, and its manufacture or preparation for the market, in all such cases where this information is likely to explain its physical properties, which are described under the section *Description*, and followed by the *Microscopical Structure*, paragraphs which are admirably written.

In the section *Chemical Composition* the sometimes conflicting views of different investigators have been carefully sifted, and in many instances their value has been decided by experiments performed by the authors. Processes for preparing the proximate constituents, their physical properties and chemical characters have been entirely excluded, or mentioned merely when of importance for the assaying of the drug.

Interesting and valuable statistics and other trade information are found in the division *Production and Commerce*, which is followed by an account of the *Uses*, giving in a few words the medicinal properties and economic uses.

The section *Adulteration*, wherever it occurs, is brief, and relates mostly to such substances which are either very frequently used for such a purpose, or which have not been observed by others. The surest way to detect adulterations, of whatever kind, is to be found in a perfect familiarity with all the leading characters of the pure article.

The head of *Substitutes*, which will be found to follow some drugs, enumerates and briefly describes such drugs as are occasionally used in place of the former, without being actually employed by way of adulteration.

From the foregoing brief resumé it will be seen that the authors have strictly confined themselves to the title of their work. It is neither botany, chemistry, therapeutics or pharmacy they proposed to treat of, but what in our colleges of pharmacy is called by the somewhat indefinite term of Materia Medica. As such, it is the only work of lasting value in our language, that we are acquainted with, and if we have to express any regret, it is that the plan of the authors excluded all drugs which find their origin in this country, and are not employed in Europe. But since the most important drugs are used medicinally in all civilized countries, the authors' *Pharmacographia* is a work of the utmost utility, likewise, to the American pharmacist and druggist, and as such we confidently recommend it to every one of our readers.

Nouveau Dictionnaire des Falsifications et des Altérations des Aliments, des Médicaments et de quelques Produits employés dans les Arts, l'Industrie et l'Economie Domestique. Par J. Léon Soubeiran, Professeur à l'Ecole Supérieure de Pharmacie, de Montpellier. Avec 218 figures. Paris: J. B. Ballière et Fils, 1874. 8vo, pp. 634.

New Dictionary of the Falsifications and Alterations of the Alimentary and Medicinal Substances and of some Products used in the Arts, Industrial Pursuits and Domestic Economy. By Prof. J. Léon Soubeiran. With 218 illustrations.

The author justly considers everything a falsification, whether injurious or

not, which is intentionally added to another substance, and condemns the pre texts under which some of these practices occasionally seek justification, as untenable. Why should not the consumer improve the color or flavor to suit his individual taste? and does not the manufacturer look rather to his own gain than to the interests of the consumer? We heartily approve of these views, which, though they may be considered radical, are nevertheless correct, and merit the careful attention of all who knowingly deal in such "made up" articles. Accidental impurities, and such which occur in consequence of a faulty process in their preparation, are not regarded in the light of *falsifications.*

After giving a list of works published in different languages, with the view of aiding in the examination of drugs and other articles for impurities and sophistications, the various means, apparatus, reagents and processes are briefly described, and afterwards, in alphabetical order, the drugs and other substances, together with such impurities, additions and substitutions which have more or less frequently been observed. Whenever it has been deemed necessary, illustrations have been introduced, many of which, giving views under the microscope, have been selected from Hassall's well-known work on adulterations. The description of each article under consideration is given in a brief manner, viewing mainly those characteristics which are requisite for determining the identity, and afford points of comparison useful in recognising foreign bodies; the latter are then described and the differences pointed out. In many cases, a list of the most important publications is added, treating specially or in detail of the admixtures in question.

Throughout the work the author has availed himself of the literature on this special subject not only contained in works devoted to this object, but likewise to that which is scattered throughout the periodicals published in different languages; and wherever special processes or observations are cited, the name of their authors or observers is likewise given.

In an appendix, abstracts of laws of France, England, Belgium, Holland, Germany, Switzerland and Italy are given, which have been enacted with the view of preventing or punishing such frauds.

The work is creditable to its author, showing extensive reading, close observation, and careful selection. The typographical portion is well executed, and most illustrations are clear, easily understood, and of direct value to the aim and object of the work.

Technological Dictionary in the English, German and French Languages; containing about 76,000 technical terms and locutions employed in arts, trades and industry in general. Edited by Alexander Tolhausen, Ph. D., M. A., Translator to the Great Seal Patent Office. Revised by Louis Tolhausen, French Consul at Leipzig. English-German-French. Leipzig: Bernhard Tauchnitz. London: Sampson, Low, Marston, Low & Searle. 1874. 12mo, pp. 848.

The first volume of this dictionary, which appeared nearly two years ago, was the French-German-English part; the third, or German-French-English, has been promised for the coming year.

It is a most valuable work, exhibiting a vast amount of research, and an

intimate acquaintance with the various industrial pursuits. In the "List of the chief works consulted," occupying three pages, the most important works of American, English, French and German origin are enumerated; and the list of arts and trades under the heading of Abbreviations, covers more than five pages.

The work is printed in three columns, in a small but very clear type, the three languages being distinguished by a different style of type to facilitate consultation; the technical terms specially employed are pointed out by an affix indicating the art or trade.

It is of especial interest to all those who read technical journals and works published in any of the three languages indicated upon the title.

Proceedings of the Fourth Annual Meeting of the New Jersey Pharmaceutical Association, held in Kepler Hall, Jersey City, Wednesday, February 11th, 1874. Newark, 1874. 8vo, pp. 79.

We have given an account of this meeting in our April number. The pamphlet before us contains the Proceedings in full, they having been reported phonographically by Mr. Jas. S. Munson, of New York.

The Medical Use of Alcohol; and Stimulants for Women. By James Edmunds, M. D., Member of the Royal College of Physicians, of London, &c. New York: National Temperance Society and Publication House, 1874. 12mo, pp. 96. Price, in cloth, 60 cents; in paper, 25 cents.

The three lectures published in this pamphlet contain the well-known arguments advanced in favor of total abstinence from alcoholic beverages.

OBITUARY.

Elie de Beaumont—his full name being, Jean Baptiste Armand Louis Léonce Elie—died September 21st, at Canon, Calvados, where he was born in 1798, Sept. 23d, having almost completed his 76th year. He was one of the most highly distinguished geologists of the present century—his favorite science being indebted to him for many investigations and observations of the utmost importance.

Carl Friedrich Meissner died at Basle, Switzerland, in May last, where, at the University, he had formerly labored as Professor of Botany. The deceased was well known as an active co-laborer of Martius, particularly on the "Flora Brasiliensis."

Wilson H. Pile, Jr., died last month in this city, at the age of 34 years. He had embraced pharmacy as a profession, and studied under his father Dr. W. H. Pile, with whom he was afterwards associated in business. He graduated at the Philadelphia College of Pharmacy in 1861, and his thesis "On cane sugar in its relations to simple and other syrups," was published on page 197 of the Journal for that year.

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